Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1. (Original) A safe for injection, low volume formulation of dantrolene or salts or analogues thereof, for administration to mammals, comprising:

a medicament which includes dantrolene or one or more salts or analogues thereof; and

a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides approximately 500 milligrams of medicament.

2. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes dantrolene in its free acid form.

3. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes dantrolene in its salt form wherein a counterion to a dantrolene anion is selected from the group consisting of potassium, sodium, ammonium, calcium and magnesium.

4. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes dantrolene in its salt form wherein a counterion to a dantrolene anion is selected from the group consisting of benzyltrimethylammonium, tetramethylammonium, N-methylpyridinium, tetrabutylammonium, 2-(2,3-dihydroxy-1-propylamino)-quinolizinium, Safranine O, quinolizinium, quinolizinium, 2-carbamoyl-1-methylpyridinium, 2,3-dimethyl-1-phenyl-4-trimethyl-ammonium-3-pyrazolin-5-one, dimethylammonium, 1,3-dimethylimidazolium, 2,3-dimethyl-1-phenyl-4-trimethyl-ammonium-3-pyrazolin-5-one, 2-(1-hydroxy-2-methyl)propyltri-methylammonium, and choline.

5. (Original) The safe for injection low volume formulation of claim 1 wherein dantrolene or one or more salts or analogues thereof is the primary modulator of

intracellular calcium present in said medicament.

6. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament is present in a concentration where 5 to 30 milliliters of liquid carrier provides approximately 300 milligrams of medicament.

7. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament and said liquid carrier are present together in a colloidal dispersion.

8. (Original) The safe for injection, low volume formulation of claim 7 wherein said liquid carrier is selected from the group consisting of water, a water miscible solvent, glycerol, propylene glycol, dimethylacetamide, ethanol, polyethylene glycol, triethyl citrate, triacetin, monothioglycerol, or mixtures thereof.

9. (Original) The safe for injection, low volume formulation of claim 8 wherein said polyethylene glycol is selected from the group consisting of PEG 300, PEG 400, and PEG 3350.

10. (Original) The safe for injection, low volume formulation of claim 1 wherein said liquid carrier is selected from the group consisting of water, a water miscible solvent, glycerol, propylene glycol, dimethylacetamide, ethanol, polyethylene glycol, triethyl citrate, triacetin, monothioglycerol, or mixtures thereof.

11. (Original) The safe for injection, low volume formulation of claim 1 further comprising a surfactant.

12. (Original) The safe for injection, low volume formulation of claim 1 further comprising a stabilizer.

13. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament and said liquid carrier are present together in a solution.

14. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes crystals of dantrolene or salts or analogues thereof.

15. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes a sodium channel blocker.

16. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes a calcium channel blocker.

17. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament includes an NMDA receptor antagonist.

18. (Original) The safe for injection, low volume formulation of claim 1 prepared for safe administration by a route selected from the group consisting of intravenous, intramuscular, intrathecal, intraperitoneal, intraocular, and by extracorporeal fluids or circuits.

19. (Original) The safe for injection, low volume formulation of claim 1 wherein at least 95% of particles of medicament in said liquid carrier are no more than 0.8 microns in diameter.

20. (Original) The safe for injection, low volume formulation of claim 1 wherein at least 95% of particles of medicament in said liquid carrier are no more than 0.45 microns in diameter.

21. (Original) The safe for injection, low volume formulation of claim 1 wherein no particles of medicament in said liquid carrier are more than 2 microns in diameter.

22. (Original) The safe for injection, low volume formulation of claim 1 comprising no more than 30 milligrams of mannitol per milligram of dantrolene.

23. (Original) A dry powder formulation of dantrolene which, upon addition of a

liquid carrier, produces a safe for injection, low volume formulation of dantrolene or salts or analogues thereof, for administration to mammals, comprising:

a medicament which includes dantrolene or salts or analogues thereof which has physical characteristics such that when combined with a liquid carrier forms a solution or suspension with said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides approximately 500 milligrams of medicament.

24. (Original) The dry powder formulation of claim 23 wherein said physical characteristics include a drug particle size of less than 0.8 microns and a surface chemistry that ensures dispersibility.

25. (Original) The dry powder formulation of claim 23 comprising no more than 30 milligrams of mannitol per milligram of said dantrolene.

26. (Original) The dry powder formulation of claim 23 wherein said medicament includes dantrolene sodium.

27. (Original) The dry powder formulation of claim 23 wherein said medicament includes a sodium channel blocker.

28. (Original) The dry powder formulation of claim 23 wherein said medicament includes a calcium channel blocker.

29. (Original) The dry powder formulation of claim 23 wherein said medicament includes an NMDA antagonist.

30. (Currently amended) A method of prophylaxis or treatment of diseases or conditions in mammals where ryanodine ~~ryanidine~~ receptor involvement is implicated, comprising the step of administering to a patient in need thereof a sufficient amount to prevent or treat a disease or condition of a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid

carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of approximately 500 milligrams of medicament.

31. (Original) The method of claim 30 wherein said administration is achieved by a route selected from the group consisting of intravenous, intrathecal, intraperitoneal, intramuscular, subcutaneous, and extracorporeal fluids and/or circuits.

32. (Original) The method of claim 30 wherein said disease or condition is pumphead.

33. (Original) The method of claim 30 wherein said disease or condition is malignant hyperthermia of any etiology.

34. (Original) The method of claim 30 wherein said disease or condition is heat stroke.

35. (Original) The method of claim 30 wherein said disease or condition is MDMA ("ecstasy") overdose.

36. (Original) The method of claim 30 wherein said disease or condition is selected from the group consisting of ischemia, overdose or reaction to recreational drugs, neuroleptic malignant syndrome (NMS), central core disease (CCD), Duchenne Muscular Dystrophy (DMD), King-Denborough Syndrome, Myoadenylate Deaminase Deficiency (MDD), Schwartz-Jampel syndrome, the Fukuyama type of congenital muscular dystrophy, fibromyalgia, Becker muscular dystrophy, periodic paralysis, myotonia congenita, sarcoplasmic reticulum adenosine triphosphatase deficiency syndrome, Burkett's lymphoma, Sudden Infant Death Syndrome (SIDS), osteogenesis imperfecta, glycogen storage pathologies, mitochondrial myopathies, and alterations in the endoplasmic reticulum associated with Alzheimer's disease, toxic reactions to strychnine, phencyclidine, hemlock, amphetamines, MAO inhibitors, theophylline, LSD and

other psychedelic drugs, and cocaine.

37. (Currently amended) The method of claim 30 wherein said medicament comprises a second drug other than dantrolene or salts or analogues thereof selected from the group consisting of

alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor antagonist, N-methyl-D-Aspartate (NMDA) receptor antagonist, ryanodine receptor antagonist, kainite receptor antagonist, free radical scavenger, protein kinase inhibitor, calcium channel blocker, and potassium channel blocker.

38. (Original) The method of claim 30 wherein said safe for injection, low volume formulation includes said medicament present in a concentration where 5 to 30 milliliters of liquid carrier provides a dose of approximately 300 milligrams of medicament.

39. (Original) The method of claim 30 wherein said safe for injection, low volume formulation includes said medicament and said liquid carrier present together in a colloidal suspension.

40. (Original) The method of claim 30 further comprising the step of formulating said safe for injection, low volume formulation from a dry powder.

41. (Original) A method of prophylaxis or treatment of diseases or conditions in mammals selected from the group consisting of cerebrospinal injury; cognitive, motor or neurological complications, negative effects or dysfunction; altered and/or decreased blood pressures; altered and/or decreased blood flow; altered and/or decreased cerebral perfusion; altered and/or decreased pulsatile flow; and increased intracranial pressures which alter or impair cerebral perfusions and subsequent oxygenation of cerebral tissues, comprising the step of administering to a patient in need thereof a sufficient amount to prevent or treat a disease or condition of a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid carrier, said medicament being dissolved or

dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of approximately 500 milligrams of medicament.

42. (Original) The method of claim 41 wherein said disease or condition is pumphead.

43. (Original) The method of claim 41 wherein said disease or condition is elevated cerebrospinal temperature.

44. (Original) A method of prophylaxis or treatment of a patient undergoing a surgical procedure which may give rise to altered blood flow or shock and trauma associated with decreased intravascular circulating blood volumes and head injury, comprising the step of administering to a patient in need thereof a sufficient amount to prevent or treat a disease or condition of a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of approximately 500 milligrams of medicament.

45. (Original) The method of claim 44 wherein said disease or condition is pumphead.

46. (Original) The method of claim 44 wherein said surgical procedure is selected from the group consisting of extracorporeal oxygenation and perfusion systems utilized in cardiopulmonary bypass for thoracic and coronary artery bypass grafting surgeries (CPB).

47. (Original) The method of claim 44 wherein said surgical procedure is a technique involving deep hypothermic circulatory arrest allowing for complex reconstructive open heart procedures in neonatal, pediatric and adult patients where minimal blood flow of approximately 90% of normal is generated.

48. (Original) The method of claim 47 wherein said technique is aortic arch repair/replacement.

49. (Original) The method of claim 44 wherein said surgical procedure is selected from the group consisting of extra-corporeal membrane oxygenation (ECMO), states associated with the induction and maintenance of induced and/or controlled hypotension as commonly employed in neurosurgery, vascular surgery and "off-pump" coronary artery bypass grafting surgery.

50. (Original) The method of claim 44 wherein the altered blood flow is associated with increased intracranial pressures (ICP), decreased cerebral blood flow (CBF) and altered cerebral perfusion pressures (CPP).

51. (Original) The method of claim 44 wherein said administration is achieved by a route selected from the group consisting of intravenous, intrathecal, intraperitoneal, intramuscular, subcutaneous, and extracorporeal fluids and/or circuits.

52. (Currently amended) The method of claim 44 wherein said medicament comprises a second drug other than dantrolene or salts or analogues thereof selected from the group consisting of

alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor antagonist, N-methyl-D-Aspartate (NMDA) receptor antagonist, <u>ryanodine receptor antagonist,</u> kainite receptor antagonist, free radical scavenger, protein kinase inhibitor, calcium channel blocker, sodium channel blocker, and potassium channel blocker.

53. (Original) The method of claim 44 wherein said safe for injection, low volume formulation includes said medicament is present in a concentration where 5 to 30 milliliters of liquid carrier provides a dose of approximately 300 milligrams of medicament.

54. (Original) The method of claim 44 wherein said safe for injection, low volume

formulation includes said medicament and said liquid carrier present together in a colloidal suspension.

55. (Original) The method of claim 44 further comprising the step of formulating said safe for injection, low volume formulation from a dry powder.

56. (Original) A method of pharmacological intervention in certain diseases or conditions in mammals selected from the group consisting of cerebro spinal injury; cognitive, motor or neurological complications, negative effects or dysfunction; altered and/or decreased blood pressures; altered and/or decreased blood flow; altered and/or decreased cerebral perfusion; altered and/or decreased pulsatile flow; and increased intracranial pressures which alter or impair cerebral perfusions and subsequent oxygenation of cerebral tissues, comprising the step of administering to said patient a compound which has a therapeutic index greater than about 50, wherein the therapeutic index is defined to be the quotient A/B, where A is the LD50 (dose yielding 50% lethality) of the drug when given intraperitoneally to rats, and B is the dose of the drug that when given intraperitoneally yields 50% reduction of apoptotic nuclei in the cortex of rats given 5 mg/kg kainic acid, said compound being present in a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of said medicament of approximately 500 milligrams of medicament.

57. (Original) A method of pharmacological intervention in certain diseases or conditions in mammals selected from the group consisting of cerebro spinal injury; cognitive, motor or neurological complications, negative effects or dysfunction; altered and/or decreased blood pressures; altered and/or decreased blood flow; altered and/or decreased cerebral perfusion; altered and/or decreased pulsatile flow; and increased intracranial pressures which alter or impair cerebral perfusions and subsequent oxygenation of cerebral tissues, comprising the step of

administering to said patient one or more compounds each of which has a therapeutic index greater than about 50, wherein the therapeutic index is defined to be the quotient A/B, where A is the LD50 (dose yielding 50% lethality) of the drug when given intraperitoneally to rats, and B is the dose of the drug that when given intraperitoneally yields 50% reduction of apoptotic nuclei in the cortex of rats given 5 mg/kg kainic acid, said compound being present in a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of said medicament of approximately 500 milligrams of medicament.

58. (Original) A method of prophylaxis or treatment in a mammal of cerebro spinal injury and/or cognitive, motor or neurological complications, negative effects or dysfunction associated with altered, and especially decreased, blood pressures; altered, and especially decreased, blood flow; altered, and especially decreased cerebral perfusion; altered, and especially diminished pulsatile flow, as well as increased intracranial pressures which inherently alter, and especially impair cerebral perfusion and subsequent oxygenation of cerebral tissues, comprising the step of administering to a patient in need thereof dantrolene or salts or analogues thereof.

59. (Original) The method of claim 58 wherein said dantrolene or salts or analogues thereof are present in a safe for injection, low volume formulation of dantrolene or salts or analogues thereof comprising a medicament which includes dantrolene or salts or analogues thereof, and a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein 3 to150 milliliters of liquid carrier provides a dose of approximately 500 milligrams of medicament.

60. (Original) The method of claim 59 wherein said safe for injection, low volume formulation includes said liquid carrier present in a concentration where 5

to 30 milliliters of liquid carrier provides a dose of approximately 300 milligrams of medicament.

61. (Original) The method of claim 59 wherein said safe for injection, low volume formulation includes said medicament and said liquid carrier present together in a colloidal suspension.

62. (Original) The method of claim 59 further comprising the step of formulating said safe for injection, low volume formulation from a dry powder.

63. (Original) The method of claim 58 further comprising the step of formulating a liquid formulation of said dantrolene or salts or analogues thereof from a dry powder.

64. (Original) The method of claim 58 further comprising the step of performing a surgical procedure on said patient which involves altered blood flow.

65. (Original) The method of claim 64 wherein said administering step provides a sufficient dose of said dantrolene or salts or analogues thereof to treat or prevent pumphead.

66. (Original) The method of claim 64 wherein the surgical procedure is selected from the group consisting of extracorporeal oxygenation and perfusion systems utilized in cardiopulmonary bypass for thoracic and coronary artery bypass grafting surgeries (CPB).

67. (Original) The method of claim 64 wherein the surgical procedure is selected from the group consisting of techniques allowing for reconstructive open heart procedures in neonatal, pediatric and adult patients where minimal blood flow (approximately 90% of normal) is generated.

68. (Original) The method of claim 67 wherein the surgical procedure is aortic arch repair/replacement.

69. (Original) The method of claim 64 wherein the surgical procedure is selected from the group consisting of extra-corporeal membrane oxygenation (ECMO), states associated with the induction and maintenance of induced and/or controlled hypotension as employed in neurosurgery, vascular surgery and "off-pump" coronary artery bypass grafting surgery.

70. (Original) The method of claim 58 wherein the altered blood flow is associated with a condition selected from the group consisting of shock and trauma associated with decreased intravascular circulating blood volumes and head injury.

71. (Original) The method of claim 70 wherein said condition is associated with increased intracranial pressures (ICP), decreased cerebral blood flow (CBF) and altered cerebral perfusion pressures (CPP).

72. (Original) A method of prophylaxis and treatment in a mammal of cerebro spinal injury and / or cognitive, motor or neurological dysfunction associated with resulting from a non-normothermic state comprising the step of administering to a patient in need thereof a sufficient amount of dantrolene.

73. (Original) The method of claim 72, where the condition or disease is selected from the group consisting of sepsis, hypothyroidism, hemorrhagic brain injury, overaggressive attempts to rewarm, and fulminant infection.

74. (Currently amended) The method of claim 40 wherein said medicament comprises a second drug other than dantrolene or salts or analogues thereof selected from the group consisting of

alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor antagonist, N-methyl-D-Aspartate (NMDA) receptor antagonist, <u>ryanodine receptor antagonist,</u> kainite receptor antagonist, free radical scavenger, protein kinase inhibitor, calcium channel blocker, sodium channel blocker, and potassium channel blocker.

75. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament comprises alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) receptor antagonist.

76. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament comprises kainite receptor antagonist.

77. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament comprises a free radical scavenger.

78. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament comprises a protein kinase inhibitor.

79. (Original) The method of claim 30 wherein the disease or condition involves seizures and muscle contraction-related hyperthermia requiring antipyretic treatment, muscle relaxation, and neuroprotection from elevated cerebrospinal temperatures.

80. (Currently amended) The method of claim 30 wherein said disease or condition involves ryanodine ~~ryandine~~ agonist effects of volatile anesthetics on cerebrospinal tissue.

81. (Original) The safe for injection, low volume formulation of claim 1 wherein said medicament comprises a sodium channel blocker.

82. (Original) A method of prophylaxis or treatment of pumphead in a mammal comprising the step of administering to a patient in need thereof a sufficient amount of dantrolene or salts or analogues thereof to prevent or alleviate pumphead.

83. (New) A composition comprising dantrolene or a salt of dantrolene medicament with water soluble surfactant, wherein said medicament is present in

a particulate form of a size of 2 microns or smaller, and wherein said composition is safe for injection or is reconstitutable with liquid so as to be safe for injection.

84. (New) The composition of claim 83 wherein the size of over 95% of the particles is 0.8 microns or smaller.

85. (New) The composition of claim 83 wherein said water soluble surfactant has a solubility of 5 mg/ml or greater.

86. (New) The composition of claim 83 further comprising a second medicament different from said dantrolene or salt of dantrolene medicament.

87. (New) The composition of claim 83 further comprising a sufficient quantity of liquid so as to permit administration to a patient of a therapeutically sufficient dose of dantrolene using an auto injector.

88. (New) The composition of claim 83 further comprising a quantity of liquid which permits administration of a therapeutic dose of dantrolene by injection of said composition to a patient.

89. (New) The composition of claim 88 wherein said quantity ranges from 3-150 milliliters.

90. (New) The composition of claim 88 wherein said quantity is 10 milliliters or less.

91. (New) The composition of claim 88 wherein said quantity is 5 milliliters or less.

92. (New) A method of providing a human or other animal with dantrolene or a salt of dantrolene comprising the step of administering to the human or other animal, by injection, a dose of dantrolene or a salt of dantrolene medicament using a composition comprising dantrolene or a salt of dantrolene medicament with

water soluble surfactant, wherein said medicament is present in a particulate form of a size of 2 microns or smaller.

93. (New) A safe for injection, low volume formulation of dantrolene or salts or analogues thereof, for administration to mammals, comprising:

a medicament which includes dantrolene or one or more salts or analogues thereof; and

a liquid carrier, said medicament being dissolved or dispersed in said liquid carrier, said medicament being present in a concentration wherein less than 5 milliliters of liquid carrier provides approximately 500 milligrams of medicament.

94. (New) A dry powder formulation of dantrolene which, upon addition of liquid carrier, produces a safe for injection, low volume formulation of dantrolene or salts or analogues thereof, for administration to mammals, comprising:

a medicament which includes dantrolene or salts or analogues thereof which has physical characteristics such that when combined with a liquid carrier forms a solution or suspension with said medicament being present in a concentration wherein less than 5 milliliters of liquid carrier provides approximately 500 milligrams of medicament.

95. (New) The safe for injection, low volume formulation of claim 11 wherein the surfactant is a water soluble surfactant.

96. (New) The dry powder formulation of claim 23 further comprising a surfactant.

97. (New) The dry powder formulation of claim 96 wherein the surfactant is a water soluble surfactant.

98. (New) The composition of claim 83 wherein said water soluble surfactant renders the particles dispersible upon the addition of water.

99. (New) A composition consisting essentially of dantrolene or a salt of dantrolene medicament with water soluble surfactant, wherein said medicament is present in a particulate form of a size of 2 microns or smaller.

100. (New) A dispersion comprising dantrolene or a salt of dantrolene medicament stabilized in water using water soluble surfactant wherein said dantrolene or said salt of dantrolene medicament is present in a particulate form of a size of 2 microns or smaller.

101. (New) The composition of claim 83 wherein the water soluble surfactant is selected from the group consisting of benzalkonium chloride, sodium deoxycholate, myristyl-gamma-picolinium chloride, Polaxamer 188 (Pluronic F-68), Pluronic F-127, polyoxyl castor oil and related PEGylated castor oil derivatives, sorbitan monopalmitate, Pluronic 123, polysorbate, and sodium 2-ethylhexanoic acid.

102. (New) The composition of claim 83 wherein the dantrolene or salt of dantrolene medicament is sodium dantrolene.